

**Patent Claims**

1. A quartz glass cylinder for producing an optical component, comprising an inner bore which is mechanically treated to a final dimension and provided with an etched structure due to an etching treatment following mechanical treatment, characterized in that the etched structure comprises cracks having a depth of not more than 2.0 mm and a width of not more than 100 µm.
- 5 2. The quartz glass cylinder according to claim 1, characterized in that the etched structure comprises cracks having a depth of not more than 1.0 mm and a width of not more than 50 µm.
- 10 3. The quartz glass cylinder according to claim 1, characterized in that the etched structure comprises cracks having a depth of not more than 0.5 mm and a width of not more than 20 µm.
4. The quartz glass cylinder according to any one of the preceding claims, characterized in that the etched structure comprises cracks having a depth of at least 30 µm and a width of at least 5 µm.
- 15 5. The quartz glass cylinder according to any one of the preceding claims, characterized by an outer diameter of at least 150 mm.
6. A method for producing a quartz glass cylinder comprising an inner bore, according to any one of claims 1 to 5, in that the inner bore of the quartz glass cylinder is mechanically treated to a final dimension and subsequently subjected to an etching treatment, characterized in that the mechanical treatment comprises a plurality of subsequent removal processes with a successively smaller removal depth, the inner bore comprising subsurface cracks of a depth of not more than 2 mm after the last removal process, and that the inner bore is subsequently subjected to an etching treatment such that an etching removal with a depth of not more than 50 µm is achieved.

7. The method according to claim 6, characterized in that the etching treatment yields an etching removal with a depth of not more than 25 µm.
8. The method according to claim 6, characterized in that the etching treatment yields an etching removal with a depth of not more than 10 µm.
- 5 9. The method according to any one of claims 6 to 8, characterized in that the etching treatment yields an etching removal with a depth of at least 2.5 µm.
10. The method according to any one of claims 6 to 9, characterized in that the etching treatment includes a first etching step in an etching solution containing hydrofluoric acid, and a second etching step in an etching solution containing nitric acid.
11. The method according to any one of claims 6 to 10, characterized in that the etching treatment is carried out at a mean etching rate of not more than 3 µm/min.
12. The method according to claim 11, characterized in that the mean etching rate is not more than 1 µm/min.
- 15 13. The method according to claim 11, characterized in that the mean etching rate is not more than 0.1 µm/min.
14. Use of a quartz glass cylinder according to any one of the preceding claims 1 to 5 for producing a preform for an optical fiber in an RIC method by collapsing the cylinder onto a core rod and by simultaneously elongating said cylinder with formation of the preform.
- 20 15. Use of a quartz glass cylinder according to any one of the preceding claims 1 to 5 for producing an optical fiber in an RIC-ODD method by collapsing the cylinder onto a core rod and by simultaneously elongating said cylinder with formation of the fiber.